BOSTON UNIVERSITY

GRADUATE JOURNAL

A Review of Current Graduate and Research Activities

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A Review of Current Graduate and Research Activities

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American Première of *Mathis der Mahler*

The American Première of the opera, *Mathis der Mahler*, composed by Paul Hindemith, one of the world's foremost contemporary composers, will be presented by Boston University's School of Fine and Applied Arts on February 17 and 18 at 8:30 P.M. and on February 19 at 3:00 P.M.

The opera, the third one that Hindemith composed, [the others being *Cardellac*, 1926, and *Neues vom Tage*, 1929] was completed in 1934 and received its first performance in 1938 at Zurich, Switzerland. The following year the opera was broadcast by the British Broadcasting Company and since 1939 it has been given a permanent place in the repertoires of several leading European opera companies.

The University's production is being staged and conducted by the Chairman of the Opera-Music Theater Department, Miss Sarah Caldwell, who received permission from the composer to perform the opera, for the first time, before the American public. The production crew itself is headed by seven stage managers and assistant directors and is comprised of every student in the division not included in the cast of seventy and the sixty-piece orchestra.

In addition, Miss Caldwell has been authorized by the composer to supervise a new translation of the libretto. In writing about the libretto, which he himself devised for the opera, Hindemith said that Mathis "...stands for the embodiment of problems, wishes, and doubts, which have occupied the minds of all serious artists from remotest times. For whom are works of art created? What is their purpose?".

The opera, in seven scenes, is based on the life of the famous German religious artist, Matthias Gruenwald, and is concerned with his most ambitious undertaking, the Altar at Isenheim, his personal and artistic problems, and his associations with the "The Peasants' War" and the Reformation.

Hindemith's adaptation of historical material extends itself to

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the use of folksongs, Gregorian Chants, and Reformation tunes — all of which have been fused in a highly personal way.

The production will be given at the Boston University Theater, 264 Huntington Avenue, across from Symphony Hall. Reservations may be made at the box office or by calling KEnmore 6-9121.

Approved Dissertation Subjects

Listed below are the dissertation subjects approved by the Graduate School Board as of January 5, 1956. The title *of the completed dissertation may differ somewhat from the* subject *as here given. The student's department of study is indicated after his name; and following the subject are noted the names of the readers, first, second and occasionally third, in that order.*

RICHARD A. ADAMS—Biology—"Immunogenetics of Transplantation in the Hamster." Donald I. Patt, Brenton R. Lutz.

LAUREAT O. J. BERNARD—History—"Democratic Crises in France in 1934." William B. Norton, Herbert Moller.

EARL KENT BROWN—Theology—"Richard Baxter's Contribution to the Comprehension Controversy: A Study in Projected Church Union." Richard M. Cameron, Edwin P. Booth.

WILLIAM RUTHERFORD BROWNE—Chemistry—"The Preparation and Thermal Decomposition of Selected Pyrazolines." J. Phillip Mason, Norman N. Lichtin.

WILLIAM JAMES COX, JR.—Philosophy—"Evaluation of Contemporary Philosophies of Survival." Richard M. Millard, Peter A. Bertocci.

WALLACE C. DIXON, JR.—Biology—"Comparative Morphology of the Adrenal Glands of Wild and Domesticated Mice and the Effect of Captivity on Adrenal Structure." Leland C. Wyman, Donald I. Patt.

CHARLES W. DUBS—Physics—"On the Theory of Elastic Electron Scattering Cross Section of a Coulomb Field." Walter Hauser, Armand Siegel.

BERNARD P. FARRAGHER—English—"*Pearl* and Scriptural Tradition." Winslow H. Loveland, Willis J. Wager.

ERNEST S. FRERICHS—Theology—"A Problem in History and Legend." Elmer A. Leslie, Harrell F. Beck.

ARNOLD G. GOFSTEIN—Clinical Psychology—"Cognition and Need Regnancy: The Relationship Between Propotent Need and the Recall of Hostile Material." Austin W. Berkeley, John Arsenian, Henry Weinberg.

GERALD JOSEPH GRILLO—Chemistry—"The kinetics of the oxidation of glucose and glucose derivatives by aqueous chlorine at pH 2, 4 and 6." Norman N. Lichtin, Walter J. Gensler.

[*Continued on p. 103*]

Departmental Research—Biology

BRENTON R. LUTZ, *Professor, Biology, Boston University*

The functions of a university necessarily stem from the activity of the individual. When individual activity is coordinated into group activity, particularly in scientific research, the resulting progress can be impressive and far-reaching. The department of Biology, Boston University, has been particularly successful in applying group coordination to achieve research progress. Although judgment of the significance of research progress may necessitate a scientific background, a clear statement of the Biology Department's achievements during the past ten years indicates that its major accomplishments are of primary importance in its field.

Between 1951 and 1955 inclusive, the department published 70 papers [28 papers during the year 1954] and entertained 73 foreign visitors [29 visitors during the year 1951].

Introduction of the technique of studying small blood vessels in a transillumined membrane and of recording the activity with a motion picture camera, was made by the Biology Department of Boston University. It was the first group to use (1936) the retrolingual membrane of the frog, and later (1946) the membranous cheek pouch of the hamster, as windows for observing and recording blood vessel activity. Although this may seem a simple procedure, it was an innovation and resulted in the publication of the first film to be used for the presentation of a complete scientific paper in 1950. This film, "The Control of Small Blood Vessels," is a 16 mm.monochrome with titles. It shows a stimulating microelectrode placed on a nerve fiber and the reacting blood vessels all in the same field of vision at the same time. Definite and accepted evidence for the non-contractility of capillaries is presented as well as support for the "all or nothing" principle applied to smooth muscle. The film marks the discovery of vascular sphincters at the origin of capillaries from arterioles as a means of controlling the rationing of blood to the tissues. It also pictures the extensive perivascular nerve plexus and its distribution on the small blood vessels. Although this film is not a "teaching" film, purchase requests for over 150 copies have been received and currently two copies are on a rental basis.

The Boston University Biology Department demonstrated with motion pictures the occurrence of white platelet thrombi and emboli under a variety of conditions, showing for the first time the mural thrombi in infection and in chronic cancer. The building of white mural thrombi, by injury of the blood vessel wall with both a microelectrode and by forceps, was traced. The procedure is recorded on the only motion picture film of a red clot formed in the lee of a white clot—a clear

demonstration of the mode of origin of thrombi in larger vessels.

During the month of November, 1955, the Biology Department took cinephotos of blood platelets *in vitro* with a phase microscope which shows the photoplasmic processes. The laboratory has learned where thrombi are likely to form and some of the conditions. Thus, it has developed a "thrombus susceptibility test" which is useful in research.

By screening the various anticoagulants, new facts concerning their effect on blood vessels when they are used for long periods have been learned. Heparin produces emboli of small size and increases the fragility of the blood vessel's walls to measurable electrical stimulation. This knowledge has permitted the development of a "fragility test" for small blood vessels. Demonstration of the so-called "platelet plug" as a factor in hemostasis, after a vessel puncture with a microelectrode, has led to the determination that the smallest vessels, the capillaries, remain open after they are cut but lose very little blood because of tissue pressure. The small hemorrhages [petechiae] which occur in various diseased states, after snake bite, and after harmful ionizing radiation, are produced, without breaking of blood vessels or disturbance of the circulation, by the passage of corpuscles, one by one, through the wall of the vessel. These facts are shown in the motion pictures on the mechanism of petechial formation. Petechiae occur at various junctions, not along capillaries or arterioles as originally thought without the benefit of actual observation.

On an atomic energy project, the Biology Department has determined the degree of blood vessel damage produced by ionizing radiation [X-rays, gamma rays, beta emanations]. The drug Adrenosem will alleviate the bleeding of irradiation to a considerable degree. The harmful effects may be due [according to the evidence] to histamine or heparin-like tissue-injury products from the breakdown of mast cells, and also from the destruction of blood platelets. Serum electrolyte determinations indicate increased potassium in the blood with consequent disturbance in heart function.

Other work for the Atomic Energy Commission has shown that both the radiated site and the radiated graft will become functional provided the radiation is not too severe. Adrenal corticosteroids, especially cortisone, definitely cause vaso-constriction, according to recent evidence, which therefore explains the anti-inflammatory effect of cortisone, known for some time. This does not, however, mean that cortisone enhances healing. On the contrary, the Biology Department evidence clearly demonstrates that cortisone slows down the recovery from standard minute burns and encourages bacterial infection of such injuries.

Because of the military importance of cold [arctic or sea water] as a "stress," its relation to adrenal corticoids has been studied. With extreme conditions, the temperature regulating mechanism breaks down—a fact which

can be correlated with the fact that cortisone constricts blood vessels. One staff member has spent two summers on the Labrador peninsula studying the mammal population of Ungava under the auspices of the Arctic Institute of America, in connection with cold "stress."

A method of indirect measurement of blood pressure in the hamster has been developed, and by this means the laboratory has determined that in old age the blood pressure does not rise, but may be even lower than in early maturity if all emotional factors are eliminated. The cuff method of indirect blood pressure determination in man has been much improved by a new device known as a "Circlecuf," now on the market.

The cheek pouch of the hamster has been used as a new aid to industrial toxicological work, by embedding cortisone pellets, radioactive materials, talc and possible toxic minerals and metals. The blood vessel and tissue reactions can be recorded photographically. The vascular effects of certain iodine compounds, used by Merk to induce X-ray opacity of blood vessels, were found to be satisfactory. Thus it has become possible to take X-ray photographs of blood vessels. The cheek pouch is now being used to study the effect of plasma expanders (blood substitutes, in a military sense), some of which are found to cause bleeding and thromboembolism. The basic factors producing intravascular thrombosis and the mechanism of thrombus formation and embolization have been worked out and recorded in motion pictures.

One of the outstanding accomplishments of this laboratory has been the first use of the membranous cheek pouch of the hamster as a site for growing neoplasms (tumors) including cancerous and benign types. Hamster tumors have been developed (one in its 75th generation) and both hamster tumors and human tumors have been grown in this new site. For the first time it is possible to establish accurate growth curves as standards for chemotherapy or other methods of stopping cancer growth. This method has been adapted throughout the world, notably in the Sloan-Kettering Institute, the Children's Cancer Research Foundation, the Cancer Research Institute of the New England Deaconess Hospital and the Cancer Research Division of Boston University School of Medicine. Other studies have been conducted in the transplantability of many tumors, the rate and mechanism of re-establishment of new blood vessels [important in recovery from the infarct due to coronary thrombosis], the metastasis potential and the onset of ulceration of certain tumors. A method of perfusing cheek pouch tumors through blood vessels has been worked out and a study of therapeutic substances is currently under way, as well as the immunogenetics of transplantability, in order to make possible the study of many more types of human tumors growing in the cheek pouch site.

In relation to cancer therapy, a new method of radiation dosimetry has been developed which has, for the first time, made it possible to determine the exact

X-ray dosage inside the body at the tumor site, heretofore only possible by surface calculations. Not only will this method be useful in research, but the medico-legal aspects are important. In this project the laboratory has had the cooperation of the Office of Naval Research, the Bausch and Lomb Optical Company, and the help of radiologists and surgeons in several hospitals in Boston.

In the field of microbiology the development of inflammation in living tissue resulting from infection with staphylococcus, from the initial entrance of the micro-organisms in the cheek pouch, through the development of the abscess and final resolution. This is the first time inflammation has been studied in living tissue, with a complete photographic record of the reaction of the blood vessels and blood cellular elements.

In a study of the frequency of dental caries, it has been found that yeasts occur in the mouth in a larger per cent of normal persons than previously thought. Yeasts are generally continuously present and are of the type which may cause the disease, *moniliasis*. They also stimulate the growth of lactobacilli associated with caries. When antibiotics, such as aureomycin are given, it is presumed that the normal balance of yeasts and lactobacilli is upset, [the lactobacilli destroyed] leaving the yeasts to grow freely and produce *moniliasis*.

The parasitologist has published 14 papers in the field of parasitology, the primary subject being parasitic arthropods. The relation of the arthropod hosts of the larval stage of the broad [fish] tape-worm infecting man has been studied. The establishment of the blood vessel net-work around a skeletal muscle fiber, when it is invaded by the pork round worm [Trichina], has been photographed with motion pictures for the first time.

With the cooperation of the William F. Clapp Laboratory, one staff member has worked on marine borer activity and has been investigating the disappearance of the edible clams. He is also developing methods of pond weed control for the Massachusetts Department of Public Health. He has organized the Cape Cod Shellfish Corporation for the purpose of supplying the wholesale trade with deep sea dredged clams and is conducting a study of the biology of this clam, *Arctica islandica*.

The botanist has published 10 papers on "Plants of the Presidential Range," and is completing a revision of the *Flora of Essex County* by John Robinson, first published in 1880. He has completely revised and changed the format of "Birds of Essex County" for the Essex County Ornithological Club. Since 1948 he has made a bird census in the region of Dummer, New Hampshire for the Audubon Society and has made daily checks of the birds of Oxford, Massachusetts for the same group.

As a representation of the considerable progress made by the Biology Department of Boston University during the past ten years, these accomplishments indicate an active participation in scientific research.

Boston University Book Reviewed

Music of the Bach Family: An Anthology. By KARL GEIRINGER.* Cambridge, Massachusetts: Harvard University Press, 248 pp., 1955, $9.00.

Reviewed by GEORGE POINAR**

The new anthology, *Music of the Bach Family* by Karl Geiringer, is a significant collection of rare musical compositions. Two-thirds of the music in this volume appears for the first time in a modern edition. Its twenty-seven compositions by fourteen different Bachs embrace five generations of this famous family. The earliest work is by Sebastian's great-uncle Johann (about 1640) and the latest by his grandson Wilhelm Friedrich Ernst (about 1800). Although Sebastian is silent in this collection, he stands at its very center both as to time and as to significance.

This anthology will be valuable as a companion book to Dr. Geiringer's encyclopedic *The Bach Family:* Seven Generations of Creative Genius, published in 1954 by the Oxford University press. The illuminating descriptions of music by the Bach family in that book made the writer look with eagerness to the publication of this anthology.

Nevertheless this collection is complete in itself. All of the music is interesting from a historical viewpoint and much of it is worthy of performance on its own merit. Dr. Geiringer provides an interesting preface and brief biographies, a very helpful genealogy of the Bachs, and a separate bibliography for each composer. To assist understanding of the works, the author furnishes free English translations for all of the German and Italian texts. He provides a realization of the thorough bass and suggests the source for locating current recordings of the works contained in the anthology.

Let us consider the music by generations. The first of the five generations is represented by Sebastian's two great-uncles, Johann (1604-1673) and Heinrich (1615-1692). It is interesting to examine these early works for evidence that Sebastian may have used them as reservoirs of inspiration and of ideas for his own compositions.

In his motet, Johann combines a six-part chorus with a three-voice group which is hidden and sings the chorale. As Dr. Geiringer points out, the ending with two

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**Professor of Music and head of the violin and orchestra departments, Conservatory of Music, Baldwin-Wallace College, Berea, Ohio, and conductor of the Bach Festivals. In 1952-53, he was awarded a grant by the Ford Foundation for the study of Johann Sebastian Bach and his times.

low voices on a unison reminds us of the similar ending of the second chorus of Sebastian's cantata (No. 106), "God's Time Is The Best Time." Heinrich begins his cantata, "I Thank Thee, Lord," with a sinfonia, a procedure which Sebastian incorporates into some twenty cantatas. Heinrich provides an independent five-part string orchestra with two five-part vocal groups consisting of soloists reinforced by chorus.

Pictorial melismas are found in each of these works as well as in some of the compositions of the next two generations.

In his biographies of the composers of the first generation, the author states that a substantial portion of their compositions is reproduced in the anthology. It would be of interest to know how much and on what basis material was omitted.

Six compositions by three composers of the second generation (1642-1703) are next presented. George Christoph, Sebastian's uncle, wrote a cantata to celebrate a reunion with his twin brothers on his 47th birthday. The inscription and the music feature the number "3" in every possible manner.

Johann Christoph, a second cousin of Sebastian's, is generally considered to be the greatest of the Bachs before Sebastian. His "Praeludium and Fugue" in E-flat for clavier, published in this anthology, is of such quality that it was mistakenly included in the Bach Gesellschaft. Also by Johann Christoph is a tremendous 22-part cantata, "And There Was War in Heaven," which opposes two choruses, two orchestras and soloists in an exciting portrayal of the heavenly war between good and evil. The composition may well have been the inspiration for Sebastian's cantata No. 19 by the same title, and for cantata No. 50, "Now Hath Salvation and Strength."

Johann Michael, a second cousin and father-in-law of Sebastian, contributes two short organ pieces and a motet, "Lord, I Wait for Thy Salvation." In this motet, two choruses sing together or alternately, expressing their longing for death, a subject typical of orthodox Lutheran piety.

The third generation (1669-1753), that of Sebastian, is represented by four compositions of three composers, all distant cousins of Sebastian's. Johann Nicolaus' humorous cantata, "The Jena Wine and Beer Crier," is a kind of a singspiel suggestive of Sebastian's "Coffee" and "Peasant" cantatas.

The first movement of Johann Bernard's Overture in D for strings is in the style of a French overture, not too remote from Sebastian's second Overture in D. Also in French style are the other five movements, the last of which is an elaborate Caprice. Most unusual for a caprice, its subtitle is "Lentement" and it reverts to the style of the overture, opening with a slow introduction, then closing with a short fugue.

Johann Ludwig, the most distant relative of Sebastian in the anthology, offers an excerpt, "Let the People Praise Thee," from the motet, "God Be Merciful unto Us." Two four-part choruses sing the text of Psalm 67 antiphonally, while a separate bass voice sings

slow ascending and descending scale passages in the manner of a cantus firmus. This same voice later sings jubilant melismas on the word "rejoice."

Ludwig's second number is taken from a funeral cantata composed for his beloved patron, Duke Ernst Ludwig of Meiningen. The composer displays his skill in an opening canonic duet for soprano and alto, in which they proclaim their desire to leave the earth and to seek Jesus. Then the tenor voice expresses his longing for the city of Jerusalem and finally the bass voice introduces the two exultant choruses, each accompanied by its own orchestra, which bring the funeral music to a joyous ending!

The music of the fourth generation (1710-1795) shows the emergence of a warm affectionate spirit with languorous sighs and unspoken anguish. This "affetuoso" style was allowed to develop to the point where it became a formal mannerism, and it gradually gave way to a style less heavy in sentiment and with more animation. Usually one theme, sometimes inverted in the second section, with an abbreviated da capo, seemed sufficient material for a movement. Sebastian's influence is gradually disappearing, while Haydn's is increasing.

The twelve compositions of this period are by five composers. Four of them were Sebastian's sons, and the fifth was Johann Ernst, a distant cousin.

Wilhelm Friedmann furnishes two compositions: an interesting "Lamentabile and Presto" from a sonata for two unaccompanied flutes and a rather lengthy Concerto in E-flat (the second movement of which is unfinished) for cembalo and strings. In the flute-duo, both parts are of equal importance and are constantly crossing each other, first one, then the other taking the lead in canonic imitations.

Carl Philipp Emanuel is represented first by two movements of a piano trio in C in which the pianist has the lion's share of the music while the violin and cello are each very politely given a minor optional part. Next is a slow and sad song of separation for soprano and clavier. Its 17 bars are full of yearning and despair. Much more interesting is the Sinfonia in E-minor for strings and continuo. After the powerful and majestic first movement, a four-bar transition prepares the mood for the heartfelt slow movement, and the vigorous, spirited last movement brings the sinfonia to a successful end.

Next comes Johann Ernst who is represented by a Sonata in F for clavier and violin. Violinists will be happy to know that the violin part is important and independent in both the beautiful Largo and in the sparkling Allegro. Ernst's second composition, an excerpt from his Psalm VI, consists of two choruses separated by a tenor solo. After a two-bar introduction of repeated unisons in the violins, the chorus enters with a powerful invocation, "Lord! Lord! Lord!" reminiscent of the chorus entrance in the first number of Sebastian's St. John "Passion." Noteworthy is Ernst's idea of a specific rhythmic idiom for each movement. The first movement contains quarter notes

throughout, the second contains the steady flow of a 16th followed by a quarter, and the third movement derives its character from a constant pulse of a dotted 16th followed by a 32nd.

From Johann Christoph Friedrich, the "Bükeburg Bach," we have a charming menuet for clavier which comes from a collection entitled "Music for Leisure Hours." A second work, an extract from the cantata, "Cassandra," is a recitative accompanied by strings alone, and an aria for contralto, solo violin, cello and continuo. Last, and especially interesting, is the Quartet in C for Flute, Violin, Viola and Continuo. The Allegretto and the Scherzo are notable for their Haydn-like spirit.

Johann Christian, Sebastian's youngest son, brings the music of this generation to a close with two unusual compositions: a song, "Lovely yet ungrateful Swain," written in English for a Mrs. Weichsell, a gifted soprano of the day, and a suite of three dances from Christian's only French opera, "Amadis des Gaules."

The fifth generation of Bachs (1759-1845) is represented by Wilhelm Friedrich Ernst, grandson of Sebastian. His sense of humor is apparent in two compositions. The first involves two ladies with a man in between, all playing the piano at the same time. The writing makes it necessary for the three to sit very closely together. The second is a cradle song sung by a distraught mother to her baby son. The final words are: "Men are, as we know, from the cradle to the grave, here for our great torment."

The anthology closes with a sextet in E-flat for clarinet, two horns, violin, viola and cello. Its three movements suggest the style of Mozart's Divertimento in E-flat for string trio.

Music of the Bach Family is of interest to the performer for the inclusion of worthwhile music not easily available elsewhere; to the musicologist and the student of music history for its depiction of the evolution of German music, through the climactic era of Johann Sebastian, to the disintegration of the baroque and the formation of classic style in succeeding generations.

The scores are full, and, although some of them are compressed, the music is always legible, the rhythmic notation modernized and the clefs reduced to the three familiar ones: treble, alto and bass. A musician has but to copy the individual parts to be ready for a performance.

Unsere Wünsche sind Vorgefühle der Fähigkeiten, die in uns liegen, Vorboten desjenigen, was wir zu leisten instande sein werden. Was wir können and möchten, stellt sich unserer Einbildungskraft ausser uns und in der Zukunft dar; wir fühlen eine Sehnsucht nach dem, was wir schon im stillen besitzen. So verwandelt ein leidenschaftliches Vorausgreifen das wahrhaft Mögliche in ein erträumtes Wirkliche. —*Goethe*

A Research Program in Physiological Psychology

MELVIN LYON* and JOHN M. HARRISON**

Experimental research in physiological psychology has been initiated in the Psychology Laboratories of the Graduate School, and is at present receiving support from the National Science Foundation and the United States Public Health Service.

This research is aimed generally at the study of behavior as a function of physiological variables within a traditional stimulus-response framework. The organism is viewed as essentially "empty" of all psychological variables such as "emotions," "consciousness" and "motives." The present approach demands a careful choice of descriptive behavior terms such that all statements of this nature refer to what the animal actually does, in a given experimental situation. In addition, it is our belief that the best way to avoid ambiguous interpretation of behavior is to experimentally manipulate various parts of the nervous system and work from the known facts of the nervous mechanism out to the behavior.

The methodological problems of such experimentation arrange themselves into two groups, the first of which are physiological in nature. For instance, the notion of psychological variables being located within certain parts of the cerebrum fails to account for the fact that any given behavior must depend upon the action of a whole set of nerve pathways from the initial receptors of stimuli to the eventual action of skeletal muscle. It follows that our concern must be with the entire pathway upon which the behavior depends.

Two general methods are available for such studies. First is the destruction of part of a given pathway and second is the stimulation of the intact pathway. Their success depends on the concomitant use of a reliable method for describing behavior changes which follow such physiological changes as are produced.

The second set of methodological problems are those of behavior measurement which are adequately approached by the well-known "descriptive behaviorism" of B. F. Skinner. Essentially, this system calls for a carefully designed experimental situation within which some operant response of the organism can be brought under the control of a hitherto irrelevant stimulus. Once such stimulus control is obtained the original operant behavior of the organism can be maintained with extreme rigor under the conditions prescribed by the experimenter.

The following description of an experiment undertaken by Tracy and Harrison[1] illustrates one solution of these methodological problems as we have worked it out.

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In two recent papers, other investigators reported upon the effects of bilateral lesions of the septal region in rats which included a hypersensitivity to noise. Squealing was obtained to such weak sounds as general conversation in the vicinity of the animal's cage, while clapping the hands produced a greatly exaggerated, explosive, startle reaction.

These observations suggested that the operation increased the aversive (negatively reinforcing) properties of auditory stimuli and two experiments were designed to test this hypothesis using albino rats as subjects.

In the first experiment the effects of septal lesions upon both the aversive and discriminative functions of an auditory stimulus were measured. The animal was able to escape a continually present gray noise by pressing a lever. The relation between the response latency and the intensity of the noise was obtained preoperatively. A postoperative systematic decrease in response latencies would indicate an increase in the aversive function of the noise. A systematic increase in response latencies, however, could be explained equally well by a decrease in either the aversive or discriminative functions of the noise, (i.e. the animal might be deaf).

After a minimum day-to-day variation in escape response strength to three different sound intensities was attained preoperatively, the animals were subjected to bilateral lesions of the septal region.

Postoperatively, they were run for at least sufficient time to establish the postoperative form of the relation between response strength (measured in latencies) and stimulus intensity.

Despite the fact that these animals showed all the outward signs of auditory hypersensitivity, described above, the lever pressing within the aversive situation was completely suppressed for an extended period (30-71 days) in the experimental animals. A surgical control animal showed no outward signs and no loss of the trained behavior.

Since the complete lack of responding by the experimental animals could have been due simply to a postoperative inability to discriminate the noise, a second experiment was devised. In this case, hungry rats were trained preoperatively with the noise used as a positive stimulus (signalling the possibility of obtaining food by pressing the lever). The absence of the noise now meant that no food would be obtainable. The animals readily learned to discriminate the food-sound situation from the no-food-no-sound situation. If such a discrimination were unaffected by septal lesions, then results of the first experiment could only be explained by some change in the aversive function of the noise.

It turned out that postoperatively the animals gave an essentially normal discriminative response to the presence of the sound, in spite of the fact that, at the very same time, one of these animals would not respond to turn off the identical sound in an escape situation, (as in the first experiment).

The results of the two experi-

ments, taken together, show that lesions of the septal region abolish the aversive function of auditory stimuli while leaving intact the discriminative functions of the same stimuli. This conclusion is especially well illustrated by the behavior of the animal which served postoperatively in both experimental situations. Postoperatively, none of the experimental animals in the first study showed a gradual loss of the preoperative response strength (extinction). Rather, escape behavior was completely abolished in the presence of the sound. The immediate implication of this is that the behavior maintaining (drive) function of the stimulus was abolished. If only the reinforcing function of the termination of the sound had been abolished a postoperative extinction curve would have been obtained. The initial hypothesis of a postoperative increase in the aversiveness of the auditory stimuli has been shown to be incorrect.

The fact that this experiment provided conclusive results negative to the original hypothesis illustrates the strength of the methodological approach we have used. It points up once again that scientific knowledge in psychology must come to depend not upon gross intuitive observation but upon more exact measurement of the physiological and behavioral variables involved in a given situation.

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[1]Tracy, W. H. and Harrison, J. M. "Sound-Maintained Aversive Behavior Following Lesions of the Septal Region of the Forebrain in the Rat." Am. J. Psychol. 1956 (in press).

Approved Dissertation Subjects

[*Continued from p. 92*]

JOHN G. HANNA—English—"The Achievement of Elizabeth Bowen: A Study of Her Works and Her Critics." Gerald W. Brace, Robert H. Sproat.

ANGELA MARIA JAFFÉ—Musicology—"The Cantatas of Johann Ludwig Bach." Karl Geiringer, Hugo Norden.

JEAN O. JOHNSON—English—"The American Political Novel from 1774 to 1910." Edward C. Wagenknecht, Kingbury M. Badger.

EDMUND B. KELLER—Theology—"The Paradoxes of Paul." Paul S. Schilling, Nils L. Ehrenstrom.

OTIS A. MAXFIELD—Theology—"The Psychological Nature of Conscience in Freudian Theory." Paul E. Johnson, Judson Howard.

ETHAN T. MENGERS—Theology—"The Idea of Creation in the Old Testament." Elmer A. Leslie, Harrell F. Beck.

RICHARD W. NEWMAN—Romance Languages—"Calderón and Aquinas." José D. Oñate, Camillo P. Merlino.

ORLO STRUNK, JR.—Theology—"The Implications of Certain Aspects of Gordon W. Allport's Psychology for the Psychology of Religion." John D. Copp, William C. Moore.

PAUL R. WOUDENBERG—Theology—"The Concept of the Laity in the New Testament." Donald T. Rowlingson, Edwin P. Booth.

School of Education Children's Book Exhibit

LORRAINE E. TOLMAN, *Librarian, School of Education Library*

Invitations will soon be out for the Children's Book Exhibit of the School of Education Library, to be held this year the week of February 27th.

Stimulation of book-centered projects and activities in classes on the campus and in surrounding communities is a major purpose of the week-long display. New children's books of the year available in the School of Education Library are called to the attention of faculty and students through bibliographies and other mimeographed aids as well as through displays.

Exhibits from all classes concerned with children's book projects are invited, so that teachers may exchange ideas on the uses of books as well as catch up on the new books themselves. Teachers carrying on interesting book projects with their own classes in the schools sometimes share them with the School of Education Library at this time. Displays and models of all types, pertinent to the field of children's books, may also be submitted.

Visitors in small or large quantities and guests from outside the university are welcome. Classes in the School of Education are always invited to attend during their class periods, and many of the faculty accept the invitation. Some plan assignments and special meetings taking advantage of the materials. Participation in the project has increased with each year's event, and teachers enrolled in courses have brought groups of children or entire classes in to browse through the books and enjoy the murals, illustrative devices and book posters —many of which have been done in their own classrooms.

The major bibliography each year, "From Our Bookhouse," is an annotated listing of new children's books of the year available in the School of Education Library. Some titles sure to be on this year's list include Dr. Seuss' *On Beyond Zebra*, the story of the exciting alphabet which begins where Z leaves off, and Nancy Watson's *When is Tomorrow?*, both for primary level. On the intermediate level there are Kate Seredy's *Philomena*, the story of a little Bohemian girl earning her way in the city, who acquires an interesting assortment of pets as she moves from job to job, and Jennie Lindquist's *Golden Name Day*, the story of nine-year-old Nancy, the American youngster who wanted so much to have her own special name day as her Swedish friends had. On the upper grade level, C. H. Frick's *Five Against the Odds*, is a well-written and fast-moving sports story, popular in the library's collection. Louise Harris' *Slim Green*, the life story of a snake, and Doris Hart's *Tennis with Hart*, will be on the library non-fiction list.

A bibliography on holiday material will be prepared for this year and also a listing of free and inexpensive materials in the field of Art. Some of the bibliographies prepared are the results of class projects and others are the work of the library staff.

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